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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/807,075	04/09/2001	Kunio Nishimura	Q53366	2214

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EXAMINER	
LISH, PETER J	
ART UNIT	**PAPER NUMBER**
1754	

DATE MAILED: 02/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/807,075	NISHIMURA ET AL.	
	Examiner	Art Unit	
	Peter J Lish	1754	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 November 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9,14-17,22-25 and 28-38* is/are pending in the application.

4a) Of the above claim(s) *34-38* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9,14-17,22-25 and 28-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-9, 14-17, 22-25, and 28-38* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Applicant's arguments filed 11/26/03 have been fully considered but they are not persuasive. Applicant argues that the material of Hase et al. contains fine particles of 2 microns or less in particle size. However, it is seen that the material of Hase et al., as applied in example 1 only, contains *less than* 3 wt% of particles 2 microns and smaller, which may be seen to be overlapping with the applicant's claimed range. Furthermore, the material of Hase et al. is not limited to the exact properties taught in the example, and given that the product is substantially similar, it may be expected that the product of Hase et al. meet this limitation.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Election/Restrictions

Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 1-9, 14-17, 22-25, and 28-33, drawn to a carbon product and an electrode containing the product.

Group II, claim(s) 34-38, drawn to a method of forming a carbon material.

The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special

technical features for the following reasons: the carbon material is not applicant's contribution over the prior art and therefore the carbon material does not serve as a special technical feature.

During a telephone conversation with Abe Rosner on 2/18/04 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-9, 14-17, 22-25, and 28-33. Affirmation of this election must be made by applicant in replying to this Office action. Claims 34-38 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 102

Claims 1-9, 14-17, and 30-33 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Hase et al. (USPN 5,910,383).

Hase et al. teach a graphite powder, for use in a lithium battery negative electrode, with a specific surface area of .85 m^2/g, an aspect ratio of not greater than 2, a C_o value of 6.73 Angstroms, an average particle size of 16 micrometers, with no particles of 48 micrometers or greater and less than 3 wt% of particles 2 micrometers and smaller.

It is not explicitly taught that the particle mixture of Hase et al. contain 1 wt. % or less of particles having a particle size of 3 microns or less. However, it is expected that this may be the case given that the reference teaches, in example 1, a particle mixture having less than 3 wt % of particles having a particle size of 2 microns or less. Where, as here, the claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes, the burden of proof is shifted to the applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his claimed product. See

In re Best, 195 USPQ 430. Alternatively, a particle mixture having 1 wt % or less of particles having a particle size of 3 microns or less is anticipated because the range claimed by the applicant and the range taught by the reference are overlapping, see *In re Malagari*, 182 USPQ 549.

While its density, oxidation initiation temperature, and electrical resistance are not specifically stated, it is expected that the graphite powder of Hase et al. inherently possesses these properties within the claimed limitations for reasons as follows.

Control of the density of graphite particles is admitted to depend upon the control of aspect ratio, average particle size, and particle size distribution (page 27 of disclosure). Because these properties of the reference graphite powder are within the claimed ranges, the density is expected to yield a value within the claimed range.

Control of oxidation initiation temperature of graphite particles is admitted to depend upon chemical activity (reduced by using easily graphitizable carbon materials, or mesophase carbon), aspect ratio, and the specific surface area. Because these properties of the reference graphite powder are within the claimed ranges, and is made from mesophase carbon, the oxidation initiation temperature is expected to yield a value within the claimed range.

Furthermore, because the graphite powder of Hase et al. is identical in its properties to the graphite powder of the invention, it is expected that its behavior under compression will be identical. Therefore, it is expected that when the referenced powder is subject to pressure to give the powder a bulk density of 1.5 g/cm^3, the specific electrical resistance of the powder along a direction perpendicular to the direction of the pressure is not more than .06 ohm-cm.

Claim Rejections - 35 USC § 103

Claims 1-9, 14-17, and 30-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hase et al. in view of Ozaki et al. (US 5,344,724).

Hase et al. teach a graphite powder, for use in a lithium battery negative electrode, with a specific surface area of .85 m^2/g, an aspect ratio of not greater than 2, a C_o value of 6.73 Angstroms, and an average particle size of preferably between 5 and 30 microns.

It is not explicitly taught that the powder of Hase et al. contain 1 wt. % or less of particles having a particle size of 3 microns or less. Ozaki et al. also teach a graphite powder for use in a lithium battery negative electrode. Ozaki teaches that particles having a size of less than 3 micron are undesirable, as they may cause intrusion into the pores of the microporous separator in contact with the negative electrode, whereby partial short circuits may be formed within the cell, and the density of the coating with the particles may be reduced owing to a decrease in the bulk density of the particles. It therefore would have been obvious to one of ordinary skill at the time of invention to remove the particles having a particle size of 3 microns or less from the powder of Hase et al. in order to avoid the deficiencies taught by Ozaki et al.

While its density, oxidation initiation temperature, and electrical resistance are not specifically stated, it is expected that the graphite powder of Hase et al. in view of Ozaki et al. inherently possesses these properties within the claimed limitations for reasons as follows.

Control of the density of graphite particles is admitted to depend upon the control of aspect ratio, average particle size, and particle size distribution (page 27 of disclosure). Because these properties of the reference graphite powder are within the claimed ranges, the density is expected to yield a value within the claimed range.

Control of oxidation initiation temperature of graphite particles is admitted to depend upon chemical activity (reduced by using easily graphitizable carbon materials, or mesophase carbon), aspect ratio, and the specific surface area. Because these properties of the reference graphite powder are within the claimed ranges, and is made from mesophase carbon, the oxidation initiation temperature is expected to yield a value within the claimed range.

Furthermore, because the graphite powder of Hase et al. in view of Ozaki et al. is identical in its properties to the graphite powder of the invention, it is expected that its behavior under compression will be identical. Therefore, it is expected that when the referenced powder is subject to pressure to give the powder a bulk density of 1.5 g/cm^3, the specific electrical resistance of the powder along a direction perpendicular to the direction of the pressure is not more than .06 ohm-cm.

Claims 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hase et al. as applied above and further taken with admitted prior art (JP-A-8-31422)

Hase et al. do not teach a graphite powder that contains boron. However, applicant's admission (page 3, middle paragraph) discloses a technique of adding boron to carbon powder and graphitizing the mixed powder. It would be obvious to one of ordinary skill in the art to add boron to the mesophase particles of Hase et al. in order to improve the crystallinity of the graphite powder.

Claims 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hase et al. in view of Ozaki et al. as applied above and further taken with admitted prior art (JP-A-8-31422)

Hase et al. do not teach a graphite powder that contains boron. However, applicant's admission (page 3, middle paragraph) discloses a technique of adding boron to carbon powder and graphitizing the mixed powder. It would be obvious to one of ordinary skill in the art to add boron to the mesophase particles of Hase et al. in order to improve the crystallinity of the graphite powder.

Claims 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hase et al. as applied above and further in view of Yoneda et al. (USPN 5,591,547).

Hase et al. teach that for use in the layers of active materials, a binder can be chosen, as desired. Examples include: polyvinyl resins, fluorine-containing resins, etc. (column 6, lines 36-42). Yoneda et al. teach polyvinylidene fluoride as a specific binding material for use with graphite particles in a lithium battery electrode (column 5, lines 1-20). It would have been obvious to one of ordinary skill at the time of invention to use polyvinylidene fluoride as the binder for the graphite particles of Hase et al.

Claims 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hase et al. in view of Ozaki et al. as applied above and further in view of Yoneda et al. (USPN 5,591,547).

Hase et al. teach that for use in the layers of active materials, a binder can be chosen, as desired. Examples include: polyvinyl resins, fluorine-containing resins, etc. (column 6, lines 36-42). Yoneda et al. teach polyvinylidene fluoride as a specific binding material for use with graphite particles in a lithium battery electrode (column 5, lines 1-20). It would have been obvious to one of ordinary skill at the time of invention to use polyvinylidene fluoride as the binder for the graphite particles of Hase et al.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter J Lish whose telephone number is 571-272-1354. The examiner can normally be reached on 9:00-6:00 Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PL

STUART L. HENDRICKSON
PRIMARY EXAMINER